

REMARKS

Claims 1-29 are in this application and are presented for consideration. By this Amendment, Applicant has amended claims 1-7, 10-13, 22-24, 26 and 28. New claim 29 has been added.

Claims 4 and 10 have been objected to because of minor informalities. Applicant has amended claims 4 and 10 to cure the minor informalities. Applicant would like to thank the Examiner for the careful review of the claims.

Claims 1-12, 23, 24 and 28 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended the claims paying close attention to the Examiner's remarks. It is Applicant's position that the claims as now presented are clear and satisfy the requirements of the statute.

Claims 1-10 and 12-28 have been rejected under 35 U.S.C. 102(b) as being anticipated by Nagamatsu et al. (US 5,438,647).

The present invention relates to a method and device for positioning components to be joined together. Applicant has found that prior art solutions of holding components as a whole, particularly automotive body shells, have high operating costs and occupy too much space while disadvantageously having a limited model flexibility and are unsuitable for holding different geometrically shaped components. The present invention advantageously provides a device for positioning components that lowers operating costs and reduces space consumption. The

present invention comprises a movable central module having a plurality of multiaxially movable articulated arms. The central module is positioned such that the central module is within an inner space defined within the component. The articulated arms then extend from a folded position to a clamping position to support the component. Each articulated arm has a holding means located at the end of the arm so that the holding means comes in contact with the component and grips the component to hold the component in position. Each articulated arm is independently movable so that the arms can advantageously be adjusted to support different geometrically shaped body shells. The articulated arms and central movable module hold the component in place while the component is worked on and assembled with other components. Once the assembly has been completed, the articulated arms are then returned to the folded position so that the central movable module is advantageously removed through an opening in the assembled components, such as through the opening where the windshield would normally be applied in an automotive body shell. The present invention advantageously provides for a space-saving device that has a high model flexibility that can be adapted to hold differently sized components. The prior art as a whole fails to provide such features or advantages.

Nagamatsu et al. discloses a multi-manipulator robot apparatus to work a conveyor line 22 so that parts which are supplied by and handled by the robot apparatus are assembled into a work which is conveyed along the work conveyor line 22. The robot includes two manipulators 12A and 12B, a manipulator support 19, a manipulator driving device 20 and a robot controller 21. The manipulator support 19 extends longitudinally in a direction perpendicular to the axis of the work conveyor line 22. The manipulator support 19 includes

a vertically extending fixed base 11 and a beam 1, which is fixed to the top of the base 11 with bolts. The beam 1 has a guide 13 along which the manipulators 12A and 12B are slidably supported to move between a parts assembly area defined at or near one end of the manipulator support 19 and a parts area positioned at another end of the manipulator support 19. The parts are supplied to the robot apparatus at the parts supply area. The parts are grasped by the manipulators 12A and 12B and are conveyed to the parts assembly area where the parts are assembled and installed. Each manipulator 12A and 12B is moved by a manipulator driving device 20 along a first axis 101 extending in the direction perpendicular to the work conveyor line 22.

Nagamatsu et al. fails to teach or suggest the combination of a multiaxially movable central module having a plurality of articulated arms positioned within an inner spaced of a component. At most, Nagamatsu et al. suggests a manipulator support 19 including a vertically extending fixed base 11 and a beam 1, which is fixed to the top of the base 11. The manipulator support 19 of Nagamatsu et al. fails to be movable in multiaxial directions. In fact, Nagamatsu et al. fails to teach that the manipulator support 19 moves at all. The fact that the central module of the present invention is movable in the present invention is significant since it allows components being assembled to be held until the assembly is complete. Once the assembly of the components is complete, the central module of the present invention advantageously can be removed through an opening in the assembled components. Nagamatsu et al. fails to provide such an advantage since if the manipulator support 19 is positioned within a component, the manipulator support 19 could not be easily removed once the components have been fully

assembled since the base 11 of the manipulator support is fixed and is not movable. As such, Nagamatsu et al. teaches a different approach and fails to suggest the advantages or features of the present invention. Accordingly, Applicant respectfully requests that the Examiner favorably consider claims 1 and 13 and all claims respectively depending thereon.

Claim 11 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Nagamatsu et al. As previously discussed, although Nagamatsu et al. discloses a multi-manipulator robot apparatus, the references as a whole fail to suggest the combination of features claims. Specifically, Nagamatsu et al. fails to teach a multiaxially movable central module having a plurality of articulated arms positioned within an inner spaced of a component. The references do not suggest the invention and therefore all claims define over the prior art as a whole.

The prior art as a whole fails to direct the person of ordinary skill in the art toward the features of the invention. Further, the invention includes cooperating features which provide particular advantages which are neither taught nor suggested by the prior art. Accordingly, Applicant requests that the Examiner favorably consider the amended claims in light of the discussion above.

Further and favorable consideration on the merits is requested.

Respectfully submitted
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Attached: Petition for One Month Extension of Time

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